

**What is claimed is:**

1           1. An array antenna receiver device comprising a  
2 plurality of antenna elements; a means for outputting  
3 calibration signals; a means for distributing the calibration  
4 signals to the plurality of the antenna elements; a plurality  
5 of multiplexing means each of which multiplexes each  
6 calibration signal distributed with a signal input from each  
7 of the plurality of the antenna elements; a plurality of SIR  
8 calculating means each of which extracts and demodulates each  
9 calibration signal from an output signal of the multiplexing  
10 means to calculate a SIR (Signal to Interference Ratio) value,  
11 and further compares the SIR value calculated with a previously  
12 established SIR threshold value thereby to output reception  
13 branch information and a demodulation result of the calibration  
14 signal in only the case when the SIR value calculated exceeds  
15 the SIR threshold value; a means for storing a reference  
16 demodulation result which is previously established in each  
17 reception branch; a means for detecting a calibration amount  
18 of amplitude/phase information in each reception branch based  
19 on the demodulation result and the reference demodulation  
20 result in a branch corresponding to the storing means; and means  
21 for correcting a user signal based on the calibration amount.

1           2. The array antenna receiver device as defined in claim

2 1 wherein an electric power of the calibration signal is a fixed  
3 electric power sufficiently smaller than a noise electric power  
4 in a receiver of a radio base station installation.

1 3. The array antenna receiver device as defined in claim  
2 1 wherein a calibration period for updating a calibration amount  
3 in each reception branch differs from one another in every  
4 reception branches or in each period of time even in the same  
5 reception branch.

1 4. The array antenna receiver device as defined in claim  
2 1 wherein the calibration amount calculating means calculates  
3 a calibration amount with respect to only a reception branch  
4 to which a demodulation result of a calibration signal is input.

1 5. The array antenna receiver device as defined in claim  
2 1 wherein when the SIR value does not reach a SIR threshold value,  
3 a user signal in a reception branch in question is made to be  
4 ineffective as a result of judging that a trouble appears in  
5 the reception branch in question.

1 6. An array antenna receiver device comprising a  
2 plurality of antenna elements; a means for outputting  
3 calibration signals; a plurality of multiplexing means for  
4 multiplexing each output signal from the plurality of the

5 antenna elements with each calibration signal; a means for  
6 changing over connections of the output means with the plurality  
7 of the multiplexing means to supply calibration signals in a  
8 time sharing manner to the plurality of the multiplexing means;  
9 a plurality of SIR calculating means for extracting and  
10 demodulating successively calibration signals from output  
11 signals of one multiplexing means selected respectively in  
12 synchronous with supplying operations of the calibration  
13 signals from the supplying means in accordance with the time  
14 sharing manner to calculate a SIR (Signal to Interference Ratio)  
15 value, and further compares the SIR value calculated with a  
16 previously established SIR threshold value thereby to output  
17 reception branch information and a demodulation result of each  
18 calibration signal in only the case when the SIR value  
19 calculated exceeds the SIR threshold value; a means for storing  
20 a reference demodulation result which is previously established  
21 in each reception branch; a means for detecting a calibration  
22 amount of amplitude/phase information in each reception branch  
23 based on the demodulation result and the reference demodulation  
24 result in a branch corresponding to the storing means; and means  
25 for correcting a user signal based on the calibration amount.

1        7. The array antenna receiver device as defined in claim  
2 6 comprising further a means for controlling a transmission  
3 electric power of a calibration signal based on a control signal

4 in response to a SIR value of the SIR calculating means.

1 8. The array antenna receiver device as defined in claim  
2 6 wherein the supplying means changes over connections with the  
3 multiplexing means based on reception branch information from  
4 the SIR calculating means.

1 9. The array antenna receiver device as defined in claim  
2 6 wherein an electric power of the calibration signal is a fixed  
3 electric power sufficiently smaller than a noise electric power  
4 in a receiver of a radio base station installation.

1 10. The array antenna receiver device as defined in claim  
2 6 wherein when the SIR value does not reach a SIR threshold value,  
3 a user signal in a reception branch in question is made to be  
4 ineffective as a result of judging that a trouble appears in  
5 the reception branch in question.

1 11. The array antenna receiver device as defined in claims  
2 1 through 10 wherein a BER (Bit Error Rate) is used in place  
3 of the SIR value.

1 12. A calibration method of antenna reception signals  
2 comprising the steps of:  
3 multiplexing a reception signal input in every plural

4 antenna elements with a calibration signal distributed in the  
5 every plural antenna elements;  
6 extracting and demodulating a calibration signal from the  
7 multiplexed signal to calculate a SIR (Signal to Interference  
8 Ratio) value of the calibration signal;  
9 comparing the SIR value calculated with a previously  
10 established SIR threshold value to output reception branch  
11 information and a demodulation result of the calibration signal  
12 in only the case when the calculated SIR value exceeds the SIR  
13 threshold value;  
14 detecting a calibration amount of amplitude/phase  
15 information in every reception branches based on the  
16 demodulation result and the previously established reference  
17 demodulation result; and  
18 correcting a user signal based on the calibration amount.

1 13. A calibration method of antenna reception signals  
2 comprising the steps of:

3 multiplexing a reception signal input in every plural  
4 antenna elements with each calibration signal supplied in a time  
5 sharing manner in the every plural antenna elements;

6 extracting and demodulating successively calibration  
7 signals from one multiplexing signal selected respectively in  
8 synchronous with supplying operations of the calibration  
9 signals in accordance with the time sharing manner to calculate

10 a SIR (Signal to Interference Ratio) value of each calibration  
11 signal;  
12 comparing the SIR value calculated with a previously  
13 established SIR threshold value to output reception branch  
14 information and a demodulation result of the calibration signal  
15 in only the case when the calculated SIR value exceeds the SIR  
16 threshold value;  
17 detecting a calibration amount of amplitude/phase  
18 information in every reception branches based on the  
19 demodulation result and the previously established reference  
20 demodulation result; and  
21 correcting a user signal based on the calibration amount.